

10524

**LAHIVE**  
&  
**COCKFIELD**  
L.L.P.

JUL 25 2002

COUNSELLORS AT LAW  
28 STATE STREET  
BOSTON, MASSACHUSETTS 02109-1784  
TELEPHONE (617) 227-7400  
FAX (617) 742-4214  
lc@lahive.com

JOHN A. LAHIVE JR. (1928-1997)  
THOMAS V. SMURZYNKI  
RALPH A. LOREN  
GIULIO A. DeCONTI JR.  
ANN LAMPORT HAMMETTE  
ELIZABETH A. HANLEY  
AMY BAKER MANDRAGOURAS  
ANTHONY A. LAURENTANO  
KEVIN J. CANNING  
JANE E. REMILLARD  
DeANN FORAN SMITH  
PETER C. LAURO  
JEANNE M. DIGIORGIO  
DEBRA J. MILASINEC Ph.D.  
DAVID J. RIKKERS  
DAVID R. BURNS  
JOHN S. CURRAN  
SEAN D. DETWEILER

CYNTHIA L. KANIK Ph.D.  
MEGAN E. WILLIAMS Ph.D.  
RICA NAND  
MICHAEL PHILLIPPS \*  
LISA M. DIROCCO  
HATHAWAY P. RUSSELL \*\*  
MARIA LACCO TRIPPE ZACHARAKIS Ph.D.  
PETER A. DIMATTA  
VINCENT P. LOCCISANO  
MERIDETH C. ARNOLD

**SENIOR COUNSEL**  
JAMES E. COCKFIELD

**OF COUNSEL**  
JEREMIAH LYNCH  
WILLIAM A. SCOFIELD JR.  
SIBLEY P. REPPERT

**PATENT AGENTS**  
THEODORE R. WEST  
SHAYNE Y. HUFF, Ph.D.  
DANIEL B. KO

**TECHNICAL SPECIALISTS**  
CYNTHIA M. SOROOS  
PETER W. DINI, Ph.D.  
EUIHOON LEE  
JENNIFER K. ROSENFIELD  
ALLAN TAMESHTIT, Ph.D.  
CATHERINE E. MCPHERSON  
ERIC F. WAGNER, Ph.D.  
SHAHID HASAN, Ph.D.  
JACOB G. WEINTRAUB  
JONATHAN M. SPARKS, Ph.D.  
CRISTINE E. HOWLEY, Ph.D.

\* Admitted in NY only  
\*\* Admitted in TX only

**RECEIVED**

JUL 29 2002

TECH CENTER 1600/2900

Commissioner for Patents  
Washington, D.C. 20231

Re: U.S. Patent Application Serial No. 09/667569  
For: *Methods and Microorganisms for Production of Panto-Compounds*  
Inventors: Yocum, R. Rogers, et al.  
Filed: September 21, 2000  
Our Ref. No.: BGI-141CP

Dear Sir:

I enclose herewith for filing in the above-identified application the following:

1. Information Disclosure Statement;
2. PTO Form 1449;
3. Copies of references cited in PTO Form 1449 (62); and
4. A Return Postcard.

No additional costs are believed to be due in connection with the filing of this Information Disclosure Statement. However, please charge any necessary fees in connection with the enclosed statement to our Deposit Order Account No. 12-0080. For this purpose, a duplicate of this sheet is attached.

**Certificate of First Class Mailing (37 CFR §1.8(a))**

I hereby certify that this correspondence is deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Washington, D.C. 20231 on:

July 22, 2002

Date

Debra J. Milasincic, Esq., Reg. No. 46,931

Respectfully submitted,  
**LAHIVE & COCKFIELD, L.L.P.**

Debra J. Milasincic, Esq.  
Registration No. 46,931  
Attorney for Applicants



H/M

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Yocum, R. Rogers, *et al.*

Serial No.: 09/667569

Filed: September 21, 2000

For: *Methods and Microorganisms for Production of Panto-Compounds*

Attorney Docket No.: BGI-141CP

Group Art Unit: 1652

Examiner: K. Kerr

RECEIVED

JUL 29 2002

TECH CENTER 1600/2900

Commissioner for Patents

Washington, D.C. 20231

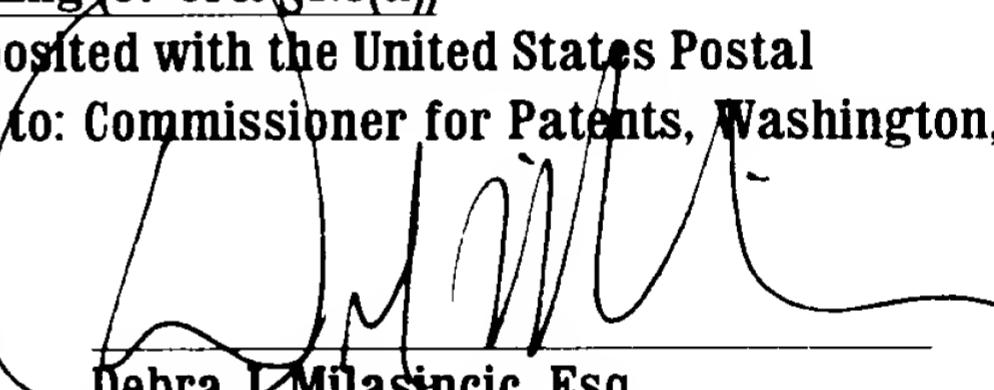
**Certificate of First Class Mailing (37 CFR §1.8(a))**

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Washington, D. C. 20231 on the date set forth below.

July 22, 2002

Date of Signature and of Mail Deposit

By:

  
Debra J. Milasincic, Esq.  
Registration No. 46,931  
Attorney for Applicants

**INFORMATION DISCLOSURE STATEMENT**

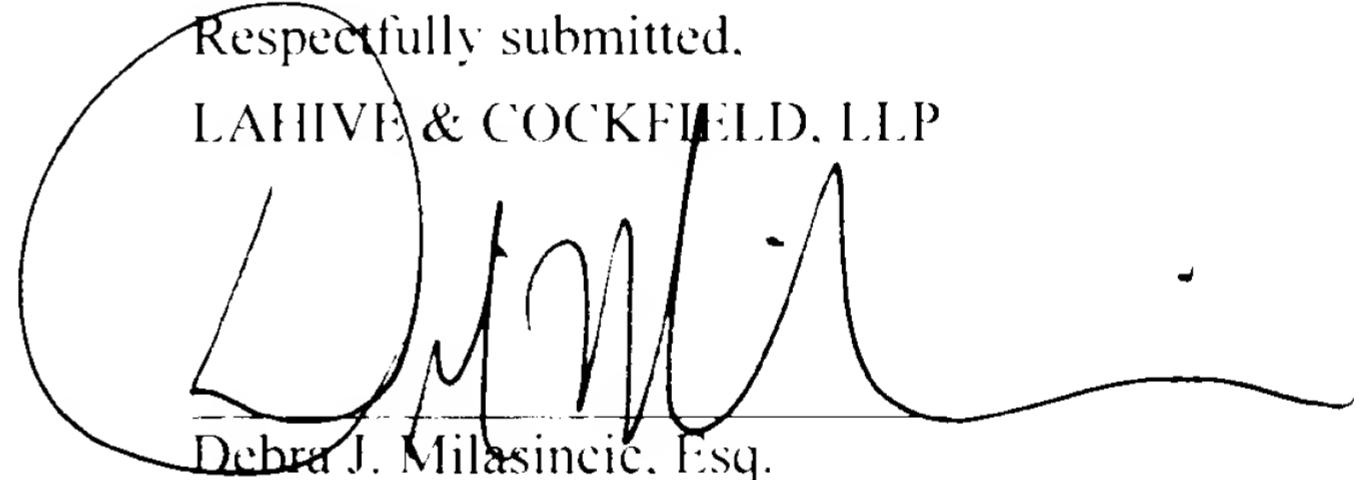
Dear Sir:

Applicants and their Attorney are aware of the following publications and information, listed on the attached PTO Form 1449, and in accordance with 37 CFR §1.97 hereby submit these publications for the Examiner's consideration. A copy of each cited publication is enclosed. Copies of translations for references A18, A19, A20 and A21 are also enclosed.

This statement is not to be interpreted as a representation that the cited publications are material, that an exhaustive search has been conducted, or that no other relevant information exists. Nor shall the citation of any publication herein be construed *per se* as a representation that such publication is prior art. Moreover, Applicants understand that the Examiner will make an independent evaluation of the cited publications.

In accordance with 37 CFR §1.97(c)(2) and §1.17(p), please charge the \$180.00 submission fee to our Deposit Order Account No. 12-0080. Please charge any necessary additional fees or credit any overpayments to our Deposit Order Account No. 12-0080.

Respectfully submitted,  
LAHIVE & COCKFIELD, LLP



Debra J. Milasincic, Esq.  
Registration No. 46,931  
Attorney for Applicants

28 State Street  
Boston, MA 02109  
(617) 227-7400

Date: July 22, 2002

GAD/EAH/DJM/hac/alf  
Enclosures

APPLICANT FACSIMILE OF FORM PTO-1449 REV 7-80	U S DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTY DOCKET NO <b>BGI-141CP</b>	SERIAL NO <b>09/667569</b>
<b>P E</b> <b>LIST OF PUBLICATIONS CITED BY APPLICANT</b> (Use several sheets if necessary) <b>JUL 25 2002</b>		APPLICANT <b>Yocum, R. Rogers et al.</b>	
		FILING DATE <b>September 21, 2000</b>	GROUP <b>1652</b>

## U.S. PATENT DOCUMENTS

Part of Paper No. 12

EXAMINER NAME		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	A1	5,089,276	02/92	Yamashita et al.	424	686	TECH CENTER 1600-2000
	A2	5,294,542	03/94	Sloma et al.	435	69.1	JUL 12 2002
	A3	5,518,906	05/96	Hikichi et al.	435	116	APR 16 2002
	A4	5,529,908	06/96	Palva et al.	435	69.1	JUL 12 2002
	A5	5,534,420	07/96	Debono et al.	435	71.3	APR 16 2002
	A6	5,599,689	02/97	Haynie et al.	435	42	APR 16 2002
	A7	5,721,137	02/98	Frascotti et al.	435	320.1	APR 16 2002
	A8	5,756,536	05/98	Chen et al.	514	449	APR 16 2002
	A9	5,856,165	01/99	Van Solingen	435	209	APR 16 2002
	A10	5,912,164	06/99	Warneck et al.	435	280	
	A11	5,925,538	07/99	Perkins et al.	435	66	
	A12	5,932,457	08/99	Moriya et al.	435	146	

## FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
							YES	NO
	A13	EP 224294 B1	06/87	EPO				
	A14	EP 493060 A2,A3	07/92	EPO				
	A15	EP 590857 A2	04/94	EPO				
	A16	WO 97/10340 A1	03/97	PCT				
	A17	WO 98/18954 A1	05/98	PCT				
	A18	EP 1001027 A2,A3	05/00	EPO			x	
	A19	EP 1001189 A2	06/00	EPO			x	
	A20	EP 1001192 A2	06/00	EPO			x	
	A21	EP 1001193 A2	06/00	EPO			x	
	A22	WO 01/83799 A1	11/01	PCT				

**OTHERS (including Author, Title, Date, Pertinent Pages, Etc.)**

A23	Baigori, M. et al. "Isolation and Characterization of <i>Bacillus subtilis</i> Mutants Blocked in the Synthesis of Pantothenic Acid" <i>J. Bacteriol.</i> 173(13):4240-4242 (Jul. 1991)
A24	Downs, DM "Evidence for a new, oxygen-related biosynthetic pathway for the pyrimidine moiety of thiamine in <i>Salmonella typhimurium</i> " <i>J. Bacteriol.</i> 174(5):1515-1521 (Mar. 1992)
A25	Downs, DM et al. "apbA, a New Genetic Locus Involved in Thiamine Biosynthesis in <i>Salmonella typhimurium</i> " <i>J. Bacteriol.</i> 176(16):4858-4864 (Aug. 1994)
A26	Dusch, N. et al. "Cloning and characterization of the <i>C. glutamicum</i> ATCC13032 <i>panD</i> gene coding for L-aspartate-?-decarboxylase" no. P-L 06 (Mar. 1999)

APPLICANT FACSIMILE OF FORM PTO-1449 REV 7-80		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	
<b>LIST OF PUBLICATIONS CITED BY APPLICANT</b> (Use several sheets if necessary)  JUL 25 2002		ATTY DOCKET NO	SERIAL NO
		<b>BGI-141CP</b>	<b>09/667569</b>
		APPLICANT	
		<b>Yocum, R. Rogers et al.</b>	
		FILING DATE	GROUP
		<b>September 21, 2000</b>	<b>1652</b>

## OTHERS (including Author, Title, Date, Pertinent Pages, Etc.)

		Dusch, N. et al. "Expression of the <i>Corynebacterium glutamicum panD</i> Gene Encoding L-Aspartate- $\alpha$ -Decarboxylase Leads to Pantothenate Overproduction in <i>Escherichia coli</i> " <i>Applied and Environmental Microbiology</i> 65(4):1530-1539 (Apr. 1999)
	B2	Elischewski, F. et al. "Pantothenate production in <i>Escherichia coli</i> K12 by enhanced expression of the <i>panE</i> gene encoding ketopantoate reductase" <i>J. Biotechnol.</i> 75(2-3):135-46 (Oct. 8, 1999)
	B3	Elischewski, F. et al. "Identification and analysis of the <i>panE</i> gene involved in pantothenate biosynthesis in <i>Escherichia coli</i> K12" Abstract no. P-L 29 (Mar. 1999)
	B4	Frodyma, ME et al. "ApbA, the Ketopantoate Reductase Enzyme of <i>Salmonella typhimurium</i> is Required for the Synthesis of Thiamine via the Alternative Pyrimidine Biosynthetic Pathway" <i>J. Biol. Chem.</i> 273(10):5572-5576 (Mar. 6, 1998)
	B5	Frodyma, ME et al. "The <i>panE</i> Gene, Encoding Ketopantoate Reductase, Maps at 10 Minutes and Is Allelic to <i>apbA</i> in <i>Salmonella typhimurium</i> " <i>J. Bacteriol.</i> 180(17):4757-4759 (Sep. 1998);
	B6	Hoch, JA et al. "Panspermia, spores and the <i>Bacillus subtilis</i> genome." <i>Nature</i> 390(6657):237-8 (Nov. 20, 1997)
	B7	Jackowski, S. "Biosynthesis of Pantothenic Acid and Coenzyme A" in <i>Escherichia coli</i> and <i>Salmonella typhimurium</i> : Cellular and molecular biology, Second edition. (Neidhardt et al. Eds.) Washington, D.C.: American Society of Microbiology, 687-694 (1995);
	B8	Kunst, F. et al. "The complete genome sequence of the Gram-positive bacterium" <i>Bacillus subtilis</i> " <i>Nature</i> 390(6657):249-56 (Nov. 20, 1997)
	B9	Merkel, WK et al. Characterization and sequence of the <i>Escherichia coli panBCD</i> gene cluster" <i>FEMS Microbiol Lett.</i> 143(2-3):247-52 (Oct. 1, 1996)
	B10	Ramjee, MK et al. "Escherichia coli L-aspartate- $\alpha$ -decarboxylase: preprotein processing and observation of reaction intermediates by electrospray mass spectrometry" <i>Biochem. J.</i> 323 ( Pt 3):661-9 (May 1, 1997)
	B11	Sahm, H. et al. "D-Pantothenate Synthesis in <i>Corynebacterium glutamicum</i> and Use of <i>panBC</i> and Genes Encoding L-Valine Synthesis for D-Pantothenate Overproduction" <i>Applied and Environmental Microbiology</i> 65(5):1973-1979 (May 1999)
	B12	Shimizu, S. et al. "Ketopantoic Acid Reductase of <i>Pseudomonas maltophilia</i> 845" <i>J. Biol. Chem.</i> 263(24):12077-12084 (Aug. 25, 1988)
	B13	Sorokin, A. et al. "Sequence analysis of the <i>Bacillus subtilis</i> chromosome region between the <i>serA</i> and <i>kdg</i> loci cloned in a yeast artificial chromosome" <i>Microbiology</i> 142:2005-2016 (1996)
	B14	Vandamme, EJ "Production of vitamins, coenzymes and related biochemicals by biotechnological processes" <i>J. Chem. Tech. Biotechnol.</i> 53(4):313-327 (1992)
	B15	Vandamme, EJ "The search for novel microbial fine chemicals, agrochemicals and biopharmaceuticals" <i>J. Biotechnol.</i> 37(2):89-108 (1994)
	B16	GenBank U09529 <i>Salmonella typhimurium</i> LT2 ApbA protein (apbA) gene, complete cds. 07-DEC-1994
	B17	GenBank P37402 2-dehydropantoate 2-reductase (Ketopantoate reductase) (KPA reductase) (KPR) 15-DEC-1998

Examiner	Date Considered
----------	-----------------

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

TECH CENTER 6000 2900

RECEIVED JUL 29 2002

APPLICANT FACSIMILE OF FORM PTO-1449 REV 7-80		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	
<b>LIST OF PUBLICATIONS CITED BY APPLICANT</b> (Use several sheets if necessary) <b>JUL 25 2002</b>		ATTY DOCKET NO	SERIAL NO
		<b>BGI-141CP</b>	<b>09/667569</b>
		APPLICANT	<b>Yocum, R. Rogers et al.</b>
FILING DATE	GROUP		
<b>September 21, 2000</b>		<b>1652</b>	<b>TECH CENTER 1600/2900</b>

## OTHERS (including Author, Title, Date, Pertinent Pages, Etc.)

C1	GenBank AAA56681 ApbA protein [Salmonella typhimurium] 07 DEC 1994
C2	GenBank Z99111 AL009126 Bacillus subtilis complete genome (section 8 of 21): from 1394791 26 NOV 1997
C3	GenBank P52996 3-Methyl-2-Oxobutanoate Hydroxymethyltransferase (Ketopantoate Hydroxymethyltransferase) 01 OCT 1996
C4	GenBank Z98682 Bacillus subtilis genomic DNA 23.9kB fragment 19 AUG 1997
C5	GenBank O34661 Probable 2-Dehydropantoate 2-Reductase (Ketopantoate Reductase) (Kpa Reductase) 01 NOV 1998
C6	GenBank CAB13317 similar to thiamin biosynthesis [Bacillus subtilis] 26 NOV 1997
C7	GenBank CAB11364 YIbQ protein [Bacillus subtilis] 19 AUG 1997
C8	GenBank P37402 2-dehydropantoate 2-reductase (Ketopantoate reductase) (KPA reductase) (KPR) 15 DEC 1998
C9	GenBank P52999 Aspartate 1-decarboxylase precursor (Aspartate alpha-decarboxylase) Aspartate 1-decarboxylase precursor (Aspartate alpha-decarboxylase) 15 DEC 1998
C10	GenBank P77728 2-dehydropantoate 2-reductase (Ketopantoate reductase) (KPA reductase) (KPR) 15 DEC 1998
C11	GenBank U09529 Salmonella typhimurium LT2 ApbA protein (apbA) gene, complete cds 07 DEC 1994
C12	GenBank Z98682 Bacillus subtilis genomic DNA 23.9kB fragment 19 AUG 1997
C13	GenBank P37253 Ketol-acid reductoisomerase (Acetohydroxy-acid isomeroreductase) (Alpha-keto-beta-hydroxylacil reductoisomerase) 15 DEC 1998
C14	GenBank P37252 Acetolactate synthase small subunit (AHAS) (Acetohydroxy-acid synthase small subunit) (ALS) 15 DEC 1998
C15	GenBank P37251 Acetolactate synthase large subunit (AHAS) (Acetohydroxy-acid synthase large subunit) (ALS) (Vegetative protein 105) (VEG105) 15 JUL 1998
C16	GenBank P52998 Pantoate--beta-alanine ligase (Pantothenate synthetase) (Pantoate activating enzyme) 15 DEC 1998
C17	GenBank P51785 Dihydroxy-acid dehydratase (DAD) (Vegetative protein 110) (VEG110) 15 DEC 1998
C18	GenBank F69875 pyrimidine-thiamin biosynthesis homolog yIbQ - Bacillus subtilis. 05-NOV-1999
C19	EMBL L47709 Bacillus subtilis (clone YAC15-6B) ypiABF genes, qcrABC genes, ypjABCDEFGHI DE genes, birA gene, panBCD genes, dinG gene, ypmB gene, aspB gene, asnS gene, DE dnaD gene, nth gene and ypoC gene, complete cds. 23 JAN 1996

Examiner	Date Considered
----------	-----------------

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

RECEIVED